

CLAIMS

1. A method for controlling the retransmission mode in a wireless communication system wherein a HARQ protocol is used to retransmit data from a transmitting entity (103) to a receiving entity (204,205) via a data channel, wherein the receiving entity (204,205) performs the method steps of:

receiving (1402) a data packet from the transmitting entity (103),

determining (1403) whether the data packet has been successfully received,

if it has been determined that the data packet has not been successfully received

determining (1405) whether the interference level is above or equal to a predetermined threshold interference level,

transmitting (1406,1407) a feedback message (NACK, NACK-S) to the transmitting entity (103),

wherein the feedback message (NACK-S) indicates (1407) to the transmitting entity (103) that the retransmission data packet for said received data packet will be scheduled, if the determined interference level is above or equal the predetermined threshold interference level, and

wherein the feedback message (NACK) indicates (1406) to the transmitting entity (103) to transmit a retransmission data packet for said received data packet after a predetermined time span upon having received said feedback message, if the determined interference level is below the predetermined threshold interference level.

2. The method according to claim 1, further comprising the steps of:

scheduling data transmissions of a plurality of transmitting entities comprising said transmitting entity (103),

stopping the scheduling of new data transmissions from said plurality of transmitting entities, if the interference level is above or equal the predetermined threshold interference level.

3. The method according to claim 2, wherein scheduling is continued when the interference level drops below the predetermined interference level.
4. The method according to one of claims 1 to 3, further comprising the steps of:

controlling a transmission format combination subset of the transmitting entity (103), wherein a transmission format combination determines the amount of data the transmitting entity (103) is allowed to transmit in a transmission time interval,

restricting the transmission format combination subset of the transmitting entity (103), if the determined interference level is above or equal to the predetermined threshold interference level.
5. The method according to one of claims 1 to 5, further comprising the step of:

if the feedback message indicates that retransmission will be scheduled, transmitting (1408) a scheduling assignment (SA) to the transmitting entity (103) to assign resources for the transmission of the retransmission data packet to said transmitting entity (103).
6. The method according to claim 5, wherein the scheduling assignment (SA) is transmitted via a scheduling related control channel.
7. The method according to claim 6, wherein the scheduling assignment (SA) is transmitted within a predetermined time interval after having transmitted the feedback message (NACK-S).
8. The method according to one of claims 1 to 7, further comprising the steps of:

transmitting to the transmitting entity (103) a feedback message indicating the successful reception of said received data packet (ACK) or indicating to transmit a retransmission data packet to the receiving entity (204,205) after a predetermined time span upon having received said feedback message (NACK),

receiving in response to said feedback message (ACK, NACK) a scheduling request (SR) for said received data packet from the transmitting entity (103),

transmitting to the transmitting entity (103) a scheduling assignment (SA) for a retransmission data packet for the received data packet in response to said scheduling request (SR),

receiving the retransmission data packet.

9. The method according to claims 1 to 8, wherein feedback messages indicating the successful or the unsuccessful reception of a data packet are transmitted via one control channel.
10. The method according to claims 9, wherein the information in said feedback messages are combined with scheduling related control information and are jointly encoded.
11. The method according to one of claims 1 to 8, wherein the feedback message indicating that the retransmission data packet will be scheduled (NACK-S) is signaled using a different OVSF code than the OVSF code used for signaling the feedback messages (ACK, NACK) indicating either a successful reception of the received data packet or to transmit a retransmission data packet after the predetermined time span.
12. A method for controlling the retransmission mode of data retransmissions in a wireless communication system wherein a HARQ protocol is used to retransmit data from a transmitting entity (103) to a receiving entity (204,205) via a data channel, wherein the transmitting entity (103) performs the method steps of:

transmitting (1401) a data packet to the receiving entity (204,205),

receiving (1409) a feedback message (NACK, NACK-S) from the receiving entity (204,205), wherein the feedback message indicates whether a retransmission data packet for the transmitted data packet will be scheduled, or whether to transmit the retransmission data packet is transmitted to the receiving entity (204,205) after a predetermined time span upon having received said feedback message, and

transmitting a retransmission data packet to said receiving entity (204,205) after a predetermined time span upon having received said feedback message

or at a scheduled point in time in response to said feedback message (NACK, NACK-S).

13. The method according to claim 12, further comprising the step of:

if the feedback message (NACK-S) indicates that the retransmission will be scheduled, monitoring a scheduling related control channel for a scheduling assignment for the retransmission related to the transmitted data packet.
14. The method according to claim 13 wherein the scheduling related control channel is monitored for a predetermined time interval upon receiving said feedback message.
15. The method according to claim 13 or 14, further comprising the step of receiving (1413) a scheduling assignment related to the retransmission of said transmitted data packet.
16. The method according to claim 15, further comprising the step of:

retransmitting (1414) the transmitted data packet to the receiving entity (204,205) at a point in time indicated by the received scheduling assignment (SA).
17. The method according to claim 12 to 16, further comprising the step of:

transmitting a retransmission data packet to the receiving entity (204,205) after the predetermined time span upon having received said feedback message (NACK), if indicated by the received feedback message.
18. The method according to one of claims 14 to 17, further comprising the step of transmitting a scheduling request (SR) to the receiving entity (204,205), if no scheduling assignment (SA) has been received in said predetermined time interval.
19. The method according to claim 18, further comprising the steps of:

receiving via the scheduling related control channel a scheduling assignment (SA) from the receiving entity (204,205) in response to the transmission of the scheduling request (SR), and

retransmitting the transmitted data packet to the receiving entity (204,205) at a point in time indicated by the scheduling assignment (SA).

20. The method according to one of claims 12 to 19, further comprising the step of monitoring a retransmission related control channel for a scheduling assignment (SA) for said transmitted data packet, if the feedback message (ACK) indicated the successful reception of said data packet.

21. The method according to claim 20, further comprising the steps of:

receiving a scheduling assignment (SA) for the transmitted data packet, and

retransmitting the transmitted data packet to the receiving entity (204,205) at a point in time indicated by the scheduling assignment (SA).

22. The method according to one of claims 12 to 21, wherein the method further comprises the step of:

stopping autonomous transmissions of data and scheduling requests (SR) for a predetermined time interval in response to receiving a feedback message (NACK-S) indicating that the retransmission data packet for the transmitted data packet will be scheduled.

23. A base station (204,205) in a wireless communication system wherein a HARQ protocol is used to retransmit data from a mobile terminal (103) to the base station (204,205) via a data channel, the base station (204,205) comprising:

receiving means for receiving (1402) a data packet from the mobile terminal (103),

processing means for determining (1403) whether the received data packet has been successfully received,

wherein the processing means is adapted to determine (1405) whether the interference level is above or equal to a predetermined threshold interference level, if processing means has determined that the data packet has not been successfully received,

transmission means for transmitting (1406, 1407) a feedback message (NACK, NACK-S) to the mobile terminal (103), if processing means has determined that the data packet has not been successfully received,

wherein the feedback message (NACK-S) indicates (1407) to the mobile terminal (103) that the retransmission will be scheduled, if the determined interference level is above or equal the predetermined threshold, and

wherein the feedback message (NACK) indicates (1406) to the mobile terminal (103) to transmit a retransmission data packet to the base station (204,205) after a predetermined time span upon having received said feedback message, if the determined interference level is below the predetermined threshold interference level.

24. The base station (204,205) according to claim 23, the base station (204,205) being adapted to perform the method according to one of claims 1 to 11.

25. A mobile terminal (103) in a wireless communication system wherein a HARQ protocol is used to retransmit data from a mobile terminal (103) to the base station (204,205) via a data channel, the mobile terminal (103) comprising:

transmission means for transmitting (1401) a data packet to the receiving entity (204,205),

receiving means for receiving (1409) a feedback message (NACK,NACK-S) from the receiving entity (204,205),

processing means for determining (1410) whether the feedback message (NACK,NACK-S) indicates that a retransmission data packet for the transmitted data packet will be scheduled, or to transmit the retransmission data packet to the receiving entity (204,205) after a predetermined time span upon having received said feedback message (NACK,NACK-S),

wherein the transmission means is adapted to transmit a retransmission data packet for said transmitted data packet to said receiving entity (204,205) after a predetermined time span upon having received said feedback message or at a scheduled point in time and

wherein the transmission means are operated in response to said feedback message (NACK,NACK-S).

26. The mobile terminal (103) according to claim 25, the base station (204,205) being adapted to perform the method according to one of claims 12 to 22.
27. A wireless communication system wherein a HARQ protocol is used to retransmit data from a mobile terminal (103) to the base station (204,205) via a data channel, the system comprising at least one base station (204,205) according to claim 23 or 24 and at least one mobile terminal (103) according to claim 25 or 26.